

Claims

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- 1 1. A tunable photonic bandgap structure, comprising a photonic bandgap structure having a  
2 plurality of members, wherein at least one member is movable.
- 1 2. The tunable photonic bandgap structure of claim 1, wherein at least one of the plurality of  
2 movable members comprises a rectilinear structure.
- 1 3. A temperature-controlled photonic bandgap structure, comprising a photonic bandgap  
2 structure having a plurality of members, wherein at least one member is temperature  
3 controlled.
- 1 4. The temperature-controlled photonic bandgap structure of claim 3, wherein said at least  
2 one temperature-controlled member comprises a surface that is temperature controlled by  
3 contact with a fluid.
- 1 5. A tunable, temperature controlled photonic bandgap structure, comprising a photonic  
2 bandgap structure having a plurality of members, wherein at least one member is  
3 movable, and wherein at least one member is temperature controlled.
- 1 6. The photonic bandgap structure of claim 5, wherein said photonic bandgap structure  
2 comprises said plurality of members disposed in a multi-dimensional array.
- 1 7. The photonic bandgap structure of claim 6, wherein said multi-dimensional array is a  
2 periodic array.
- 1 8. An apparatus for providing mode-selected microwave radiation, comprising:  
2 a vacuum electron device microwave generator creating microwave radiation having a  
3 plurality of modes; and

4 a temperature controlled photonic bandgap structure in communication with the vacuum  
5 electron device microwave generator to receive the microwave radiation and to select  
6 one of the plurality of modes of the microwave radiation to be propagated, said  
7 photonic bandgap structure comprising a plurality of members disposed in a two-  
8 dimensional array wherein at least one member is temperature controlled.

1 9. An apparatus for providing mode-selected microwave radiation, comprising:  
2 a vacuum electron device microwave generator creating microwave radiation having a  
3 plurality of modes; and  
4 a tunable photonic bandgap structure in communication with the vacuum electron device  
5 microwave generator to receive the microwave radiation and to select one of the  
6 plurality of modes of the microwave radiation to be propagated, said photonic bandgap  
7 structure comprising a plurality of members disposed in a two-dimensional array  
8 wherein at least one member is movable.

1 10. An apparatus for providing mode-selected microwave radiation, comprising:  
2 a vacuum electron device microwave generator creating microwave radiation having a  
3 plurality of modes; and  
4 a tunable photonic bandgap structure in communication with the vacuum electron device  
5 microwave generator to receive the microwave radiation and to select one of the  
6 plurality of modes of the microwave radiation to be propagated, said photonic bandgap  
7 structure comprising a plurality of members disposed in a two-dimensional array  
8 wherein at least one member is movable, and wherein at least one member is  
9 temperature controlled.

1 11. An apparatus for providing mode-selected microwave radiation, comprising:  
2 a microwave generator means for creating microwave radiation having a plurality of  
3 modes; and  
4 a temperature controlled photonic bandgap means for receiving the microwave radiation  
5 and for selecting one of the plurality of modes of the microwave radiation to be

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6 propagated, said temperature controlled photonic bandgap means in communication  
7 with the microwave generator means.

- 1 12. An apparatus for providing mode-selected microwave radiation, comprising:  
2 a microwave generator means for creating microwave radiation having a plurality of  
3 modes; and  
4 a tunable photonic bandgap means for receiving the microwave radiation and for selecting  
5 one of the plurality of modes of the microwave radiation to be propagated, said tunable  
6 photonic bandgap means in communication with the microwave generator means.

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